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**U. S. AIR FORCE XXI IS THE CONCEPT
APPLICABLE TO THE NORWEGIAN
ARMY?**

**A MONOGRAPH
BY
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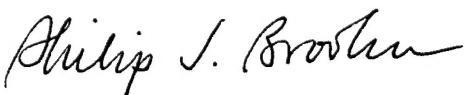
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Abstract

This monograph examines some of the doctrinal, procedural and technological basis for the future U.S. Army, to find whether concepts within the Force XXI/AAN designs may be applied to the Norwegian army. It compares and contrasts the two armies to create an image of the great differences that exist in application of military force in the two nations, and seeks to show areas where there are similarities. This monograph investigates whether Force XXI concepts are applicable to the Norwegian army.

The monograph examines the differences in the two states' foreign policy, and their ability to pursue their national interests. It goes on to show how these differences in power, between the only remaining superpower and a small Scandinavian nation, results in different policies for the use of military power, and how these differences in policies have influence on the militaries. The monograph discusses two initiatives that have been parts of different experiments, the Battle command concept, and the Combat Information Center.

The monograph concludes that parts of the Force XXI concept may be applicable to the Norwegian self-defense forces, especially within the realm of Command and Control. It also recommends actions to be taken by the Norwegian Army to further benefit from the Force XXI and AAN initiatives of the U.S. Army.

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1 INTRODUCTION

1.1 HISTORICAL BACKGROUND – NORWEGIAN ARMY

At the outbreak of World War II the Norwegian Armed Forces were totally unprepared for war. Having been neglected for years under the notion of inviolable neutrality, poorly equipped and trained reservists had little chance of achieving anything other than buying time for the King and his cabinet to escape as the German armed forces on the early morning of the 9th of April 1940 launched a strategic attack against all major harbors in Norway. Within hours the German “Operation Weserübung” had achieved most of its initial objectives, which were to secure the harbors and airfields along the coast. The war in the southern parts of Norway was over after 26 days of fighting, when the virgin fortress of Hegra capitulated 5 may¹. The exception was in the far North, where the partly mobilized 6th Division had been guarding the Norwegian neutrality towards the Russians at the east. This unit had some unit cohesion, some level of training, and with a thorough knowledge of the demanding terrain and climate above the Arctic Circle². The Division put up a stiff resistance, and managed to halt the advancing German forces at the hill of “Lapphaugen”

Having lost its naval support to two successful British assaults in the harbor of Narvik, the German “Armee Gruppe Dietl”,³ partly consisting of stranded sailors, were driven back from captured territories, and the German army was defeated for the first time of the war. This was achieved by a combined 6th Division composed of Norwegian, British, French and Polish forces, under the leadership of General Carl August Fleisher.⁴

Hastened by the German attack on France May 10, the allied forces were withdrawn from the northern theatre. Alone, Norway could not carry on the fight. The King and his cabinet escaped to England aboard the destroyer HMS Devonshire, and the Commanding General (General Otto Ruge) surrendered the military forces to the Wehrmacht 10 June 1940, and became the senior ranking Norwegian prisoner of war for the rest of the war.⁵

After the war the public opinion always proclaimed "never again 9th of April"! The Norwegian people would never allow any foreign power to seize the country without meeting stiff and determined resistance. Since WWII, the focus changed towards the east, and the threat of a Soviet invasion. With the U.S. "Marshall aid" and the weapons aid program of the 1950's and 1960's, the Norwegian Army became a rather large reservist army for a nation of only four million inhabitants. In the 1970's it consisted of thirteen separate brigades, and a number of independent battalions and companies. The army was equipped mainly with U.S. equipment received through the weapons aid program,⁶ along with later German additions.

The army leadership in the late 1970's was faced with the problem of outdated equipment due to the extensive aid received over a short time period. A comprehensive modernization program was undertaken, but the sheer size of the mobilization army made modernizing very expensive. Insufficiently funded, the army in the early 1980's was hollow, with a small number of modern equipped units and a vast lag in procurement. The fall of the Berlin Wall, and the decay of the Soviet Union in the 1990's turned the old world order upside down. Not only had the Soviet threat apparently disappeared, both the geostrategic importance of Norway, and the focus of NATO had changed. The Northern

flank became the rear area. A major defense review was undertaken, leading to revolutionary changes in the organization of the armed forces.⁷

1.2 THE NORWEGIAN ARMY RESTRUCTURING

The total wartime strength of the army was reduced to 100,000, with 14,000 conscripts being trained annually. The officer cadre of all services was reduced to 10,000 by the end of 1996.⁸ The 6. division (the only division size formation in the army) was organized with division troops, and the brigades in the division were made lighter, with a better tooth to tail ratio. The brigades concentrated on activities aimed at out-maneuvering and destruction of the enemy, while the division-level took care of all support (CSS and CS). The division staff was reorganized and, due to an increased span of control, and the need to synchronize all assets, increased emphasis was put on developing a better command, control, communications and intelligence system. Having conducted tests with different C3I systems and improvements for several years, the Norwegian Army is still struggling with a number of challenges. Among these are the fundamental questions of whether a new C3I system should be developed from scratch by Norwegian companies, or acquired abroad. So far, tests and implemented C3I systems have given the army a better knowledge of what such systems can contribute to speeding up the turnover time of large formations. Getting the right systems to gain the edge over an adversary remains the main challenge, especially since as the size of the army is reduced, the quality is supposed to increase.⁹

The total wartime structure of the Norwegian Army was reduced from thirteen to six brigades through the defense review of 1991,¹⁰ and the peacetime organization were made substantially more effective, closing bases that no longer was needed. During a

briefing for the Chief of he army in 1992, the CG of 6. Division proposed a revitalization of the division as the tactical level of command in the North. Three brigades would be an integral part of the division, and one separate brigade would augment it as deemed necessary. All CS and CSS would be centralized under Division control, and given back as direct support according to the situation. The main reason for this proposal was that the total amount of resources was too small to fill all of the brigades, leaving no unit with sufficient capabilities to take on the likely enemy, a Soviet-style mechanized division. With restricting terrain, only through centralized control of resources could the land forces mass combat effect at different locations and act more rapidly than the enemy could react.

The idea of shifting support for each phase of the operation made it clear that especially the CS units faced enormous challenges in preparing and shifting support up to several times per day. They had to have the lead on the supported units. Distributing some of the planning responsibility from the Division Main to the functional HQ's did this. The division planners would initiate the planning by distributing the commander's guidance both within the planning staff, and to the functional HQ's. These HQ's were located in a distance of up to tens of kilometers from Division Main. The functional plans were then developed in parallel with the Division OPLAN, and preparations were underway well before the maneuver brigades even knew the details of the next plan. This distributed planning system placed an enormous strain upon the communications systems of the Division, particularly because the speed and volume of information transferred over the tactical data network increased dramatically.¹¹

This planning procedure was designed to speed up the total MDMP in the division, at several levels simultaneously. The key to achieving the rapid planning was to exchange

information between echelons continuously throughout the planning process. The challenges from this were the problems of communicating between the division HQ's and subordinate functional HQ's, and ensuring that all participants had the same information as the basis for their planning.

As a self-defense force mainly made up of reservists, the changes in the Norwegian army after the fall of the Soviet Union were more distinguished by modernization and streamlining the force structure, than of dramatic reductions. Although the budgets steadily decreased, rationalization of the peace structure reduced the overall effect of the reductions somewhat. The proximity to a major power, Russia, and the focus of NATO shifting away from the cold war Northern flank, invited caution in the parliament as to making too large cuts in the defense spending. The reliance on a credible self-defense force was still present, although the immediate threat was reduced significantly. The U.S. Army however, found itself with no enemy in central Europe, and with a massive voluntary force, cuts were massive too.

1.3 THE POST COLD WAR US ARMY

After the fall of the Soviet Union, the US Army underwent dramatic changes. The cold war had provided a stable threat environment, and had kept the lid on a multitude of regional and intra-state conflicts. The US Army, designed to fight overwhelming Soviet forces in Europe, faced an unstable world environment, with conflicts and unrest all around the world. The American public demanded that some of the defense expenditure be diverted to other areas in society. Defense budgets were reduced, and the U.S. Army's strength dropped to its present ten divisions. The army leadership sought solutions to compensate for the reduced force size, and in 1994, TRADOC issued *TRADOC Pamphlet*

525-5, *Force XXI Operations*. This pamphlet outlined a concept for the evolution of concepts for the future army of the USA, the Force XXI concept.

The Force XXI concept is an attempt to give guidance for how the US Army will address the challenges of war and operations other than war (OOTW) in the early twenty-first century. It highlights the potential that lies in evolving technologies and changes in the operational environment. Key to success on the future battlefield lies within the ability to employ the future army across the multi-dimensional battlefield, aiming at total dominance over the entire spectrum of war. Information dominance will be the dominant characteristic of the US Army of the early twenty-first century.¹²

The US military is the leading organization in the world when it comes to developing new technology to gain an advantage over enemies in all war scenarios. The U.S. Army has been experimenting with Force XXI for several years, aiming in part at increasing situational awareness and improved C3I. All commanders will have the same high quality information available, graphically depicted and tailored to their level of command.¹³ This enhanced situation awareness will enable commanders at all levels to act upon facts more than assumptions, in a timely manner, so that the force will be able to gain information dominance over any conventional adversary in the foreseeable future.

1.4 CONCLUSION

Facing possible future threats from forces superior in numbers and firepower, one of the prerequisites for success on the battlefield for the Norwegian Army will be the ability to “outsmart” the enemy through using available assets more effectively than the enemy. This monograph examines some of the doctrinal, procedural and technological basis for the future U.S. Army, to find solutions within the Force XXI/AAN concepts that may

be applied in the Norwegian 6th Division. It compares and contrasts the two armies to create an image of the great differences that exist in application of military force in the two nations, and seeks to show areas where there are similarities. This monograph investigates whether Force XXI concepts are applicable to the Norwegian army. This monograph may contribute to the research presently being conducted in the Norwegian Army, and is co-ordinated with the Director of the Army Division of the Norwegian Armed Forces Staff College (NoAFSC).

2 FUTURE ENVIRONMENT

As an ally of the U.S. since World War II, Norway has been a firm supporter of the transatlantic ties represented by NATO. Being situated on the outskirts of Europe, the Norwegian attention has been drawn between the transatlantic and the pan-European. Being one of the few European nations to voluntarily stand outside the EU, Norway relies on trade and cooperation both with U.S. and EU. Standing outside the political branch of EU, Norway plays an independent role in international cooperation. As a small nation unable to threaten any other nation's national interests, the role of mediator and neutral part in disputes and conflicts falls within the realm of Norwegian foreign policy. This characteristic has led to participation in several peace-keeping operations under the old bipolar paradigm, and the role of mediator in the Guatemalan and Middle East peace processes.

2.1 NORWEGIAN NATIONAL SECURITY

The overarching goal of the Norwegian defense forces are to secure Norwegian sovereignty, contribute to securing Norwegian authorities' freedom of action to take care of national interests, prevent war and contribute to stability and a peaceful development.¹⁴ The national security policy goals that forms the basis for the mission of the armed forces are:¹⁵

- To prevent war and contribute to stability and peaceful development
- Protect Norwegian freedom of action against political and military pressure, and uphold Norwegian national interests.
- To protect Norwegian land- sea and air territory against infringements and attack.

The ability to defend the Norwegian territory will be the focal point for doctrine and acquisition in the future. The resources allocated by the political authorities are never sufficient to achieve all the military goals. Priority has therefore been given to providing an ability to repel an invasion through the airspace, over the sea, and over land, in one part of the country at a time. Presently, the situation calls for this capability to be located in the North of the country, with the main defensive area some 900 km¹⁶ from the Russian border.

Even though, on the one hand, it is difficult to see any military threat to Norway's [territory] today, it is difficult on the other [hand] to overlook the long-term uncertainty regarding the development of the political and security situation both in our own part of Europe and the continent as a whole. In spite of the fact that dialogue and cooperation characteristics of the current European political scene, future developments [are] unpredictable and far from straightforward. Thus, an effective and credible defence capability is not something that can be built up overnight. The way Norway's armed forces develop in the future must leave no doubt about our capacity to safeguard our security. [...] Norwegian security and defence policy must, therefore, also account [for] challenges which could arise in the longer term. These challenges [range] from the infringement of Norwegian sovereignty to crises and even military attacks on territory. Challenges against Norwegian security may also include other types of dangers such proliferation of nuclear, biological and chemical weapons, terrorist attacks, environmental destruction, and *international military crises and wars*.¹⁷ [Emphasis added]

The Norwegian armed forces will thus have to be prepared for two distinctly different missions: defending Norwegian sovereignty against attack and infringements, and bolstering democracy and stability in the region, through Operations Other Than War (OOTW). The geostrategically important of Norwegian territory and sea space was great during the Cold War (Annex 3), and it is possible that it may be so again if a conflict should arise involving neighboring states with super-power ambitions. In the foreseeable future, there is no imminent threat of invasion, although the military capacity exists to a

certain extent.¹⁸ The regeneration of the threat is possible in a future scenario, and the deterrence that arises from a potent defense force, together with a strong determined alliance, will heighten the threshold for launching aggressive actions against Norwegian sovereignty.

The forces needed for the defense of the nation's territory will be different from the forces needed to pursue political objectives abroad. The national defense force is a reserve-based force, with one year of conscription. According to the Norwegian constitution, conscripts cannot be *ordered* to perform military missions abroad. To perform such missions, the army recruits reserve soldiers that has completed basic service of one year, and hires them as voluntary soldiers, for the duration of the UN or NATO mandate. These forces do not however have the training standard and the unit coherence to be able to perform complicated combat missions, they are normally restricted to CSS in permissive environments.

Norway has for all practical purposes two different armies, one reserve army, trained and equipped to defend the Norwegian territory against an exterior threat, and a volunteer army, that serves as a military tool for Norwegian foreign policy. Being different in nature, and vastly different in mission, This monograph deals only with the self-defense forces of Norway, not the "expeditionary" forces.

2.2 NORWEGIAN MILITARY EDUCATION SYSTEM

The Norwegian conscription system is the basis for the defense of the nation. Young men (and voluntary women) at the age of nineteen to twenty are called up for one year of compulsory service. They receive extensive training in training units, and exercise in wartime units up to division level, where emphasis is put on winter warfare and indi-

vidual skills.¹⁹ The officer corps consists of a small core of active duty officers and a greater portion of reserve officers. The entrance into the officer corps is a two-year education, in which officer cadets go through one year of school, and one year of service as sergeant. Upon completion of these two years, the officer cadets (sergeants) are promoted to reserve officers with the rank of second lieutenant and they leave active duty.

Some 150 of these officers are accepted to the military academy, to be trained for active duty through two to four years of education. From there on the officer is promoted according to performance and time criteria. Officers serving in training units, schools and staffs are mobilized in one of the wartime formations, and serves on a regular basis in the wartime position. The peacetime organization serve thus as a cadre for the wartime army, facilitating a rapid mobilization, and a certain level of professionalism in the reserve units.²⁰

Women are fully integrated into the armed services, on equal terms with the men. Their service is voluntary, and they may serve in any service and branch, to include service as infantry and fighter pilots.²¹

2.3 U.S. NATIONAL SECURITY

The overall power balance in the world shows the U.S. as the unchallenged number one in most areas.²² The relative balance between states that have conflicting national interests is of relevance for everybody else. This balance is not absolute; while Japan has a superior position over most of her neighboring states in economic terms, her military force does not match some other nations in the region, and while the political power of Russia is still great her economy is in ruins. A number of factors may negate important parts of an opponent's power. A great navy is of little relevance as a military tool if the adversary is a

land-locked nation, and all the worlds' electronic intelligence is of little use if the opponent does not have any radios. A state may thus find that its tools of national power must be employed differently in one situation than in another, and that a balance between the sources of power is important.

The perceived relative power between states and alliances will shape their policies, and to a certain degree their national interests. Norway has very localized national interests compared to the global nature of U.S. interests, which in turn will shape the national objectives for the military. While the U.S. military is a powerful political tool that may be used to force states to comply with U.S. interests, Norwegian policy makers need to use other instruments of power to influence the actors on the international scene to comply with her national interests.

2.4 FUTURE ENVIRONMENT OF CONFLICT – U.S. VIEW.

Being a superpower, the U.S. is facing a multitude of threats from a wide array of states and non-state players. Religious fanaticism and extreme nationalism fuels unconventional threats against US interests. Terrorism from a variety of groups may force the US to defend against threats of an asynchronous type previously unknown. Today, one of the major threats against the continental U.S. is not of a military kind, but is posed by international drug traffickers and criminals. These elements use state of the art technology for their criminal activities, and may well possess weapons of mass destruction.²³

Threats to U.S. national interests are often grouped into three intertwined categories: regional or state centered threats, where a number of nation states and alliances have the possible intent and capability to threaten U.S. security interests or peace and stability in the region; transnational threats, mainly centered around terrorism and organized crime

organizations; and threats from weapons of mass destruction. These threats occurs often in a combination between two or three, such as state sponsored terrorist organizations, where the terrorist acts are used as a tool of the nation state to threaten U.S. security interests. These threats are met by a combination of diplomatic, informational, military and economic measures (DIME), with the objective of enhancing U.S. security, bolstering economic prosperity and promoting democracy throughout the world.²⁴ It is also important to note that there exists no *conventional* military threat against U.S. territory. All operations undertaken by the US military will be abroad.²⁵

The complexity of the security environment poses a multitude of opportunities to use military force in the pursuit of U.S. national interests, against a wide array of threats.²⁶ It is a stated policy of the U.S. to stand firm against the emerging threats of the twenty-first century, such as regional aggression, civil wars and anti democratic movements around the world. A new emerging threat, that of international terrorism and international crime, demands U.S. attention. This threat is characterized by their imperviousness of traditional use of military force. Their avenues of attack do not follow the traditional military, but rather exploits the openness of the world society and the emerging information technologies.²⁷

The future of conflict from the U.S. perspective will most likely be characterized by an increasing technological gap between opposing military forces. Adversaries with a low technological basis or inferior in numbers will most likely try to apply asymmetric means of combat, in order to void U.S. military and technological advantage. The use of weapons of mass destruction (WMD) is possible, as some of these weapons may be developed and fielded without an extensive infrastructure, and may be launched through alter-

native means of delivery. A canister of nerve-agent may be disguised as an innocent aerosol spray box, and be released in the New York subway through a remote device or timer. The enemy may thus be able to bring the war to the U.S. population, reducing the support in the people for the military actions being undertaken by the administration.²⁸

These actions target the latent isolationism in the U.S. population, as expressed through the Weinberger doctrine. This doctrine, developed by former Secretary of Defense, Caspar Weinberger in 1984²⁹, builds upon the fact that popular support is crucial for the deployment of US forces abroad. The fear of losing American lives in a conflict that cannot be justified for the people, made the doctrine very restrictive as to the commitment of forces abroad, and outlined a set of criteria that had to be met.³⁰ The impact of the doctrine has lessened lately, due to changing assumptions. Humanitarian intervention and operations like IFOR/SFOR are carried out with popular support. The U.S. military thus supports the political goals of the nation, and the military strategy is built upon the national security strategy.

2.5 U.S. MILITARY STRATEGY

The overarching U.S. military strategy is:

to defend and protect US national interests, our national military objectives are to Promote Peace and Stability and, when necessary, to Defeat Adversaries. US Armed Forces advance national security by applying military power as directed to help Shape the international environment and Respond to the full spectrum of crises, while we also Prepare Now for an uncertain future.³¹

In the national military strategy, four concepts are outlined to govern the strategic use of U.S. military forces: strategic agility, overseas presence, power projection and decisive force.³² These concepts ensure that the U.S. military will be able to employ the right

forces in the right amount at the right location to serve as the military tool for promoting the nation's interests.

In order to hedge against the increasing uncertainty in the world situation, *Strategic Agility* allows the U.S. military to perform multiple missions across the entire spectrum of conflict across the world. It gives the U.S. the upper hand over any adversary by employing forces at a superior speed and tempo.³³ *Overseas Presence* gives the world a visible indication of U.S. commitment and determination to prevent conflicts and stand by her obligations as the world's primary power. In order to further deter aggression, the U.S. *Power Projection* ability allows the U.S. to quickly react to emerging crises by deploying and sustaining *Decisive Force* into theatre from multiple locations around the world and CONUS.³⁴ By the U.S. committing superior forces the adversary becomes overwhelmed and loses initiative, and becomes inclined to accept a settlement of the conflict on terms according to U.S. national interests.

3 U.S. ARMY FORCE XXI

3.1 OBJECTIVES FOR THE FUTURE U.S. MILITARY

The future U.S. army will serve as one of the tools of the nation, to promote national interests across the total spectrum of operations. These forces must be able to transition from one type of operations to another, which will be very demanding on the training and professional standard of the U.S. soldier and leader. Future warfare demands a focus on joint operations and core warfighting skills of the individual soldier. The vast spectrum of operations facing the future army means that it must be able to transition between different types of operations with a minimum of preparations. This has implications for future training, organization and materiel.³⁵ In one instant, the U.S. soldier should be able to perform humanitarian operations, where negotiation skills and a thorough knowledge of the host nation culture and values are important. The next moment he³⁶ should be able to go out and win the nation's wars. He should be able to operate in a joint environment where jointness has extended down to squad-level. He should be able to work alongside NGO's and PVO's, and operate in an environment where the armed forces are supporting effort to other agencies. These agencies will in a variety of operations possess knowledge and capabilities wanting in the army. He may even be put under foreign control for parts of the operation.³⁷

In this setting, the soldier of the future battlefield will still have the ultimate task of fighting and winning the nations wars. Facing that challenge, the army leadership has sought new approaches to being ready for the next conflict. U.S. Army Force XXI is an

overarching concept that will take the U.S. Army into the twenty-first century, utilizing present and future technologies to gain an overwhelming combat power in any scenario.

3.2 TRAINING AND DOCTRINE COMMAND (TRADOC)

Established in 1973, U.S. Army Training and Doctrine Command (TRADOC) is a core of competency for developing future concepts. TRADOC is responsible for researching land warfare, developing doctrine, organizations, and training all ranks in the practical applications of these doctrines. It encompasses all army schools and training centers except the U.S. Military Academy and the Army War College. The training mission is naturally linked to the doctrine development, creating a strong and diverse pool of knowledge.³⁸

TRADOC is the proponent for the Force XXI and AAN projects. The experiments are high profile, high priority activities in the Army, and have general support in the officer corps. Although the EXFOR is facing difficulties in using high-tech equipment and new procedures, the pace is high, and movement is aimed towards implementation of the digitized force.³⁹

3.3 CHARACTERISTICS OF THE BATTLEFIELD

According to the capstone document for the development of Force XXI; TRADOC Pam 525-5 – FORCE XXI OPERATIONS, the future battlefield will be made up of 5 battle dynamics: Battle command, battlespace, depth and simultaneity, early entry and CS/CSS.

“**Battle Command** is the art of decision making, leading and motivating troops into action to accomplish missions at least cost in soldiers and materiel.”⁴⁰ Battle command in the future will change markedly from today’s hierarchical structure, to a mix be-

tween hierarchical and intranetted structures, where technology allows for information to flow freely between commanders, staffs and soldiers according to information requirements. A central tool will be Army Battle Command System (ABCS), which will provide everybody with a common relevant picture of the battlefield. The picture will be generated from a myriad of data input from nodes at all levels, and is supposed to be real-time.⁴¹

Battle space is, in the physical sense, "...that volume determined by the maximum capabilities of a unit to acquire and engage the enemy, capabilities that will be greatly expanded by future technology.⁴²" The term indicated a multi-dimensional sphere, in which the commander can array a multitude of service specific and joint capabilities, to include information operations and deep strikes. The increasingly empty battle-space will facilitate rapid movement of combat power, and employment of different assets in a tempo that will render the enemy out of control of his forces. Actions will overwhelm his decision- cycle, so that his ability to react to our moves will be impaired. Battle space indicates a dominance of all dimensions, not only the physical, but also cyberspace.

Depth and simultaneous attack will "enable the commander to directly influence the enemy throughout the width, height and depth of his battlespace to stun, then rapidly defeat an enemy."⁴³ The overwhelming tempo in the operations will deny the enemy an accurate awareness of the situation; his reactions to our actions will be too late for effect, and his next peace of information will indicate a new crisis, which he will have to respond to. He will be paralyzed by his own inability to gain the initiative, and be subject to reacting to our actions. The attacks will be carried out with a variety of measures, lethal and non-lethal, as well as the full spectrum of joint assets. The implications of this principle will also be a blurring of the distinction between land-force operations, and joint opera-

tions. Components of all services and branches will cooperate on a very low level of command, putting extra challenges on the commanders on the tactical level of command.

The distinction between deep, close and rear operations will also need to be redefined. On a non-linear battlefield, where U.S. and enemy forces are interspersed on a seemingly empty space, the traditional front line may be exchanged for zones of enemy activity, where own forces will move in between pockets of enemy resistance that have little means of affecting our operations. The previous rear area units, (CS/CSS) will have to work out new procedures enabling them to operate in an environment where the threat of enemy interaction is increasing.

Early entry will in a force projection setting be one of the most critical battle dynamics of the future. In a developing conflict, the ability to rapidly show force and determination in theater may convince the enemy that the U.S. intentions are serious, thus reducing the possibility of the conflict escalating into war in the first place. The early entry is most notably for the force projection army, where the ability to present a credible force in theater at an early stage may be crucial. The aim of the early entry force must be “simultaneous application of force or control throughout the operational area.⁴⁴”

Combat Service Support in a future scenario demand waiving the present strategic, operational and tactical level logistics in exchange for a seamless continuum. The ability to support OOTW as well as conventional operations, both unilateral and joint/combined operations requires a CSS system that is modular, deployable and flexible. The CSS system must also be prepared for the non-linear battlefield, so that every unit and function is able to perform its functions in a hostile environment. The present focus on OOTW is likely to continue, meaning that even CSS units will be subject to the front line

operations that follows this kind of operations. Proper training and ability to perform a wide variety of secondary functions will be important in the future.

The future battlefield will be characterized by an extended battle-space, where the traditional front-lines will be replaced by a fluid, dispersed lay-out where no place may be characterized as rear or forward.⁴⁵ The empty battlefield will be even more empty in the future conflicts, where the lethality and accuracy of weapon systems will demand that forces be dispersed to avoid unacceptable consequences of enemy action. Battle command will be characterized by an increase in information available to the commanders, with the challenge of managing the information to avoid information overload and thus command paralysis.⁴⁶ The battle space will also be characterized by the information-age technology's ability to coordinate and synchronize a large number of simultaneous, or near simultaneous actions. The command and control system of an army will be challenged with a large number of simultaneous events being reported, all being perceived as utterly important by the reporting agency, but of different importance to the overall commander. Unless an information management system enables commanders to distinguish between critical information and other information, paralysis may occur from within the system. The massive amounts of information may then be a self defeating mechanism, instead of a force multiplier.

The range of conflicts will increase compared to the cold war era. The adversary will no longer only be a traditional nation-state employing a regular army, but may be an asynchronous threat that is hard to influence through military means alone. In places like Somalia, the Army may encounter adversaries that do not comprise traditional armies, but rather armed bands of citizens, fighter at night - civilian at day. The adversary may use the

western value system as a weapon, for instance, by hiding gunmen inside crowds of women and children the ROE's and individual values of the soldiers may prevent U.S. soldiers from returning fire.⁴⁷

Operations may take place in areas where the society as we know it has ceased to exist, and where warlords and organized criminals form a cobweb of shifting alliances and rivals. There will be an increasing amount of operations other than war (OOTW) where the large scale use of superior firepower may be of no use, on the contrary, overwhelming use of force may lead to defeat through the enemy's use of non-military means, chiefly information operations (IO), and asynchronous measures.

One of the most important objectives of Force XXI, is to utilize emerging information management technology to gain information dominance on the battlefield. By being able to achieve total situation awareness, U.S. forces will be able to employ combat means in a tempo that overwhelms the adversary. By gaining information dominance on the battlefield, U.S. forces will achieve perhaps a decisive advantage over the adversary.⁴⁸ Future operations will be different from today, and the U.S. Army is presently rethinking the way future knowledge based operations will be conducted. The characteristics of future knowledge based operations in a joint environment will form a pattern of simultaneous *mission analysis and force tailoring, reconnaissance, decisive actions and sustained actions or recovery.*⁴⁹

Mission analysis will be the starting point of all operations, as it always has been. In the future environment, the use of technology will increase the precision of these processes, and reduce both the human errors and the time consumption. Artificial intelligence, coupled with information management technologies will provide a simpler, yet more

comprehensive military decision making process (MDMP). In a force projection force, the ability to tailor force packages to the situation, coordinate joint lift resources, host nation support (HNS) and allied cooperation will be totally dependent upon networks of planning elements linked between all levels.

Reconnaissance and verification of operational area will be one of the prerequisites for deploying forces into the area of operations (AO). Joint sensors together with intelligence computer systems will enable planners on all levels to share a comprehensive picture of the situation, further enabling accurate planning and execution. Forces entering the AO will have the opportunity to conduct training specific to the environment based on this intelligence.

As the force projection army enters the AO, it must be able to control the situation immediately, either through simultaneous attacks to stun the enemy, or through simultaneously gaining control over the area. Traditionally depending upon overwhelming force (overmatch), new approaches may be needed in the future to achieve control of the AO. The principle of inducing system on the enemy, or the conflict environment in OOTW, will have greater impact in the future, and be a consequence of Force XXI technologies.

Sustaining the operations is key to mission accomplishment, both in conventional operations and in OOTW. Having presumably been given a clear and concise end-state to the operations, an important part of both the planning, reconnaissance and entry operations is the ability to sustain the operations all the way to mission accomplishment.⁵⁰

U.S. forces have lately had a technological advantage over both allied and adversaries, an advantage that most likely will prevail in the future. However, asynchronous threats have always existed, and will most likely exist in the future. Likewise, allied forces

have always had capabilities and characteristics which U.S. forces lacked. Given that U.S. forces very rarely will operate on their own, the challenge of cooperation will still exist. This is no simple challenge, still it is possible to overcome, as the U.S. Army and its allies have done in the past. During the cold War, NATO worked a vast array of different standardization initiatives. Several initiatives concluded in the publication of STANAG's. For example STANAG 6002 governs language testing and grading of non-English speakers, and is used for testing officers applying for NATO-positions. U.S. forces have always been able to work together with allied forces in the past, and will most likely be able to in the future too.

3.4 THE FORCE XXI CONCEPT

“Force XXI is the reconceptualization and redesign of the force at all echelons from the foxhole to the industrial base, to meet the needs of a volatile and ever changing world. It will be a force organized around information and information technologies. Its purpose will be to deter those who oppose us, to compel when deterrence fails, and to reassure our friends and allies around the world that they can count on us. It will also stand ready to support disaster relief and humanitarian efforts within our own land. We must win the first battle... whatever it is.⁵¹,”

Based on the political vision of future U.S. leadership in a changing world, the U.S. army needed to transform from a cold war army designed to fight a numerical superior Soviet force on the battlefields of Central Europe, to a flexible and agile tool for promoting U.S. national interests, and the interests of the free world at large. Force XXI is “the transformed army of the twenty-first century”⁵², the end-state of a series of simulations and exercises that emerged through the Louisiana maneuvers in 1992. Since then, the

capstone document for the U.S. Army, FM 100-5 has been revised, and updated according to Force XXI experiences. TRADOC Pam 525-5 (Force XXI Operations) has been issued as a “Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century”.

For a practical approach to the concepts outlined in Pam 525-5, on 15 Jan 1995 4th ID (M), was designated as the Army’s Experimental Force (EXFOR), through the “prime directive” issued by Army Chief of Staff, Gen Dennis Reimer.⁵³ Being designated as the EXFOR, the operational tasks were not removed from 4th ID, on the contrary, training and experimentation were to be carried out simultaneously. The 4th ID is presently organized (Annex 6) and equipped as a fully digitized division.⁵⁴

3.5 INITIATIVES

As the concept moves into something with a practical utility, a number of initiatives have materialized into practical applications. These initiatives span the entire spectrum from increased lethality weapons into command and control. This monograph highlights two initiatives, one doctrinal and theoretical, and one that tries to find practical solutions to theoretical problem of gaining situational awareness. Battle command is a theoretical approach to future challenges of leading U.S. forces in combat, and is still being tested and developed, while the Combat Information Center have been tested and rejected.

3.5.1 BATTLE COMMAND

Two initiatives apply specifically to Battle Command, Tactical Internet (TI) and Appliqué. These two initiatives formed the centerpiece of trials with Task Force XXI, a brigade sized experimental unit organized in the 4th ID. A series of tests were carried out as a part of AWE. The hypothesis of the trials were “If information age command capa-

bilities and connectivity-digitization-exist across the battlefield operating system (BOS) and functions within and up to a brigade TF [Task Force] then significant increases in lethality, survivability and tempo will be achieved.”⁵⁵

Tactical Internet is a concept for interconnecting the army’s existing and near future communications systems into a seamless data system. The primary tactical systems being linked are the single channel ground and airborne radio system (SINCGARS), EPLRS and MSE. Commercial Internet routers provide the connectivity, and the TI manages both digital and analogue signals.

The system to support the C2 and battle command is called appliqu . It provides near-real time integration of information both horizontal and vertical. It gives a great degree of situation awareness and a seamless integration of information across the battlefield. Appliqu  will in its final functionality support battlefield requirements for battle command such as⁵⁶:

- Real time situational awareness for the commander, staff and soldiers
- Shared common picture of the battlefield
- Graphical displays
- Friendly and enemy unit locations
- Target identification
- Communication electronics interfaces with host platforms
- Enhanced battle command by providing seamless C2 through interfaces with Army Battle Command System (ABCS)

Another initiative is the Army Tactical Command and Control System (ATCCS), which provides staffs and commanders a near real time picture of the battlefield, while also supporting OPLAN development and distribution. GBS-BADD provides the tactical information to the system, such as weather, imagery, video and warning functions over the TI and dedicated satellite circuits. Most of the equipment being tested is commercial off-the-shelf (COTS) systems, which gives the military developers the opportunity to move the software to better hardware, as they become commercially available. Using commercial Internet routers also ensures that the development of military use for the systems can be done in parallel with large-scale commercial development.⁵⁷ The military gets a free ride on the commercial development, keeping development costs down.

3.5.2 THE COMBAT INFORMATION CENTER (CIC)

Combat information center is a concept tested during Prairie Warrior 1996-advanced warfighter experiment (AWE) at Ft. Leavenworth. The underlying principle for any digitization process is that the horizontal integration of information must not require specific attention or action from staffs. Activities such as providing information into a database for others to use will normally be given low priority in competition with more pressing needs. The feeding of information into the common system must be a normal part of the staff routines and automated to the greatest extent. A contractor developed the Combat Information Center (CIC) for Battle Command Battle Laboratory (BCBL) at Ft. Leavenworth. The aim of this center was to develop and disseminate a standardized Relevant Common Picture (RCP) for the commander and his staff. "The center gathers, integrates, and synthesizes information and/or information products into a focused, Division-level central database and maintains the database for the commander and all other ech-

lons of the headquarters.”⁵⁸ The CIC focuses on the information needs of the commander and his staff, and uses CCIR to focus its information gathering. It forms the link to adjacent and higher headquarters’ information databases, and protects the database against enemy Information Operations. The RCP ensures that the commander, his staff and subordinate commanders share the same perception of the situation, both concerning enemy and own situation. The CIC enables the staffs to exchange information freely and horizontally, through internetworked solutions allowing for free information flow throughout the organization. The CIC relies heavily upon technology yet not available, and the test results may be accredited to the lack of such technology at the testbed.

The CIC consists of a number of staff officers manning functional workstations, each connected to a set of central servers. Information is either pushed into the system from automated sources, or pulled from information providers by the staff officers. A fusion/OPS workstation would generate the RCP from input made available by the functional workstations, and disseminate this to the users (commanders and staffs).

During The U.S. Army Command and General Staff College annual exercise, Prairie Warrior 1996, the RCP was disseminated every half-hour. It was a common picture, but the picture was tailored to the division commander’s information requirements. The picture therefore became only partly relevant to the other users, as their information requirements often are vastly different from the commanders, both in contents, in form and in level of detail.⁵⁹ The timeliness of the information proved not to be sufficient. Given that a separate staff element had to produce the RCP from input created by the users, and for intelligence, from information often several hours old, the RCP often during the tests proved to be outdated.

The tests during Prairie Warrior 1996 proved the CIC to be counterproductive, creating a bottleneck in the information distribution. The recommendations from the testers were that the CIC concept needs not be examined further, and that the effort should be directed towards other initiatives aimed at enhancing situational awareness. The *concept* of a shared information database is however feasible, although the CIC tests failed to meet the expectations. The failure during the tests may be more a consequence of immature technology, and lack of proper training and relevant procedures in the staffs participating⁶⁰, than a concept failure.

3.6 U.S. ARMY AFTER NEXT (AAN)

As Force XXI focuses on modernizing the current army using existing and emerging technologies and doctrines, AAN is focusing on the future beyond year 2010. It studies the strategy, concepts and technologies that may influence national defense in the future and is not tied to specific dates or force structures. The AAN project looks beyond the visible future because the geopolitical situation is bound to change, and the changes may be dramatic. Emerging technologies will make today and tomorrow's battlefield systems obsolete. The M1A1 tank will be obsolete by 2020,⁶¹ and the requirements for a replacement system may be for something totally different from a large, heavy steel machine. Maybe the replacement will be a modern skirmisher, a single soldier system with presently unknown weapon systems?

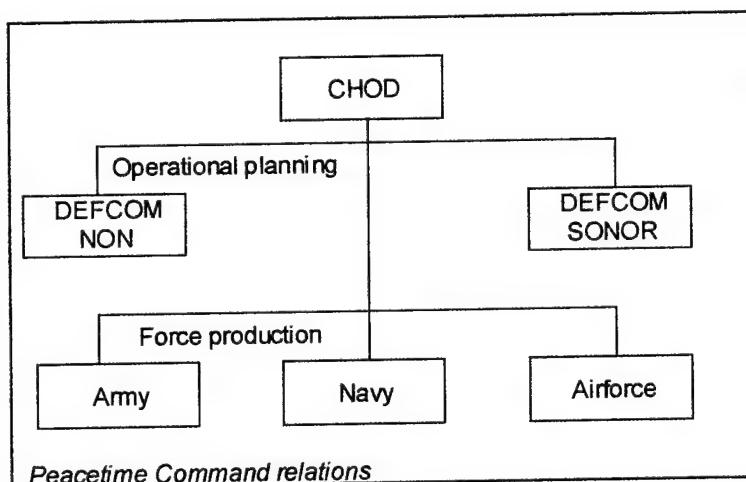
The AAN planners are deliberately trying to avoid getting involved in present days discussions on budgets and roles of the Army. As long term approaches and concepts start materializing from the project, the planners fear is that present days defense spending may be reduced, awaiting future technologies that may never be realized. The AAN concept

holds their aim high, and emphasizes the long term development in the nation's security needs, evolving technology and the changes in the nature of war. Predicting anything thirty years into the future is virtually impossible, but by conducting these long term studies, the U.S. Army may become aware of long term trends that may influence decisions and directions for the short term development of the Army.⁶²

4 NORWEGIAN ARMY

Norwegian army doctrine calls for a tactical level offensive capability, as part of a strategic defensive posture. Norway's defense forces are in peacetime under political control through the ministry of defense. HRH the King is the supreme commander, although this is only symbolic. The chief of defense (CHOD) receives political guidance from the cabinet, through the minister of defense. The CHOD staff is responsible for peacetime planning, and force production and training, through the service staffs (part of CHOD) who executes peacetime training and education.

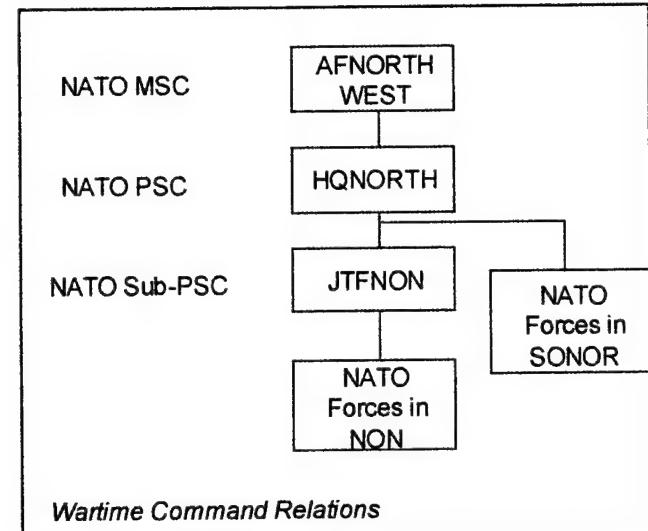
CHOD, and the two operational HQ's, Defense Command North Norway, and Defense Command South Norway, are responsible for the operation planning, and sets the standards for the services' training of individuals and units.



In the event of a crisis, or in wartime, command of all armed forces is transferred to NATO. CHOD and the service staffs are dissolved, and the bulk of the officers serving there are transferred to their wartime positions in the mobilized reserves, and key officers form up an advisory function to the government. The two DEFCOM's enter the NATO

chain of command, as HQNORTH, and JTFNON.⁶³ For operational planning, in peace-time these two commands are double-hatted as both national and NATO HQ's.

The most important missions of the Norwegian armed forces are to deter, or if necessary repel attacks on Norwegian territory, and participate in OOTW to promote Norwegian national interests. This monograph will only deal with the part of the mission that deals with a conventional attack on Norwegian territory.



The main army elements in the prioritized part of the country are one combined arms division, and a separate combined arms brigade. The division consists of three brigades, two light infantry and one Armor/Mech. In addition, there is an artillery regiment including two MLRS batteries, and an AD regiment. Organization, see annex X. The separate brigade is a mirror image of this division, but on a smaller scale.⁶⁴

4.1 CHARACTERISTICS OF THE FUTURE BATTLEFIELD

The future scenario for the Norwegian 6. Division defending the homeland, will be that of a inferior defending force, fighting an offensive battle as part of a strategic defense. The attacker will have numerical superiority, at least technical parity but human/moral inferiority. Defense of home territory will always imply a motivational supremacy, and the Norwegian forces will be defending their own homeland.

The battlefield will most likely be chosen by the defender, and will force the attacker to fight at a location that is suitable for defense. The Norwegian terrain is severely

canalizing, reducing the effect of heavily armored forces, and favoring light, highly mobile forces. An essential characteristic of the army is its focus on light infantry, equipped with all-terrain vehicles and portable weapon systems. The large transport helicopter fleet will be utilized primarily for CSS and movement of troops and equipment, but do not have the combat utility as regular military helicopters, due to lack of tactical training.⁶⁵ The ability to survive in the arctic winter will be a force multiplier, where the harsh weather conditions may be turned into an advantage. Great emphasis is therefore put on training the conscripts to operate under adverse weather conditions.⁶⁶

The weather and climate, together with the topography, will provide some cover from enemy air attacks, but critical for the operation of light forces in the sparse vegetation of Northern Norway is air superiority over the army. Another critical factor is that the population centers are all in the south of the country, with a fragile SLOC⁶⁷ to the main combat area (See annex 4). Protection of that SLOC will be crucial.

Against a numerical superior force, with a superior firepower, a small army must rely on other strengths and capabilities. The Norwegian conscripts are very well educated as they enter service, and the conscription system enjoys great support in the population. In case of a major attack on the Norwegian mainland, the entire society will be transformed into a total defense, mobilizing all available resources. Norway will then have one of the largest fleets of transport helicopters in NATO (not counting U.S.), mobilized from the offshore oil industry in the North Sea, commercial aircraft, and STUFT. These assets form up mobilized armed forces of 234.000 men, in addition to the total defense with its civilian resources. The Army wartime strength will be approx. 100.000.

The 6. Division will be the main effort of the JTFNON when the land battle starts. The objective of the land battle will be to defeat the forward echelons of the enemy land or sea landed forces, and create favorable conditions for further offensives to regain lost territory. These offensives will most likely require allied help, as the ability to regenerate force is limited, all available forces will be employed in the first battles. It is therefore vital to win the first battle.

In order to win the battles, it is important that the 6. Division is able to maneuver on the enemy in a tempo greater than his ability to react. Choosing an asynchronous approach, where the enemy's strength in firepower and number is voided by mobility and tempo, the means of command and control will be the most important.

As a part of the modernization process initiated in the nineties, the army focussed on three areas of great importance; greater firepower through acquisition of MLRS, enhanced all terrain mobility, and command and control systems to be able to gain an information advantage over an adversary. This information advantage is more difficult than initially envisaged, and a considerable effort has been spent trying to come to grips with the challenges of C², and the C² support systems.

Today's command and control systems in the Norwegian Army, are modifications of a system developed in the early nineties. Having centralized most of the CS and CSS to division level, the brigades are task organized with resources as required by the mission. To reduce the need for planning on lower levels, Division plans and organizes CS and CSS support to the brigades so that when they start their detailed planning, the support packages are ready. The amount of planning needed at the brigade level is low, reducing

the overall time from mission received to execution. The division staff is small, and divided into three separate parts, Division Main, TAC CP and rear.

Division Main is responsible for planning outside a seventy-two hours timeframe. It is comprised of a traditional G-staff, and functional area planners. The functional area chiefs are double hatted as commanders for CS/CSS units, and support the planning from their respective HQ's. In that way, the executing units may start preparations and parallel planning as the plan is being developed in the Main HQ. Main is located at the rear of the AO, in trailers that form up a modular and flexible HQ.

Division Tactical Command Post (TAC CP) is mounted on BV 206's,



Figure 1: BV 206

and is highly mobile with a low visual and thermal signature. It is responsible for current operations, and short terms planning. It comprises of an ops/intel element, Fire Control Center (FCC), Air Support Operations Center (ASOC) and a Air Space Coordination Cell (ASCC) including Helicopter Liaison Officer (HLO). TAC CP is supposed to move one to two times per day on a regular basis, and may move up to four times a day

for a shorter period. Division Rear HQ is integrated into the CP of the service support regiment. It performs logistical planning and execution, and rear area security.

4.2 LAND FORCES DOCTRINE

The current doctrine for Norwegian land forces was developed during the early 1990's. This development was necessary after the significant restructuring of the army, following the budget reductions. The new doctrine emphasized the indirect approach, offensive operations on the tactical level, and the ability to use the strong terrain to the Norwegian army's advantage. The doctrine focuses on the 6.Division, which constitute the only unit with an offensive capability, but may be applied to independent brigades as well.

The writing team has used U.S. and UK doctrine as basis for the doctrine. The levels of war are divided into four; national (grand) strategy, military strategy, operational and tactical.⁶⁸ The division is the highest tactical level unit, subordinate to Joint Task Force North Norway, which is in the NATO chain of command on Sub-PSC level.⁶⁹

The doctrine calls for a tactical offensive capability as a part of a strategic defense. The aggressor will be hampered with LOC's over 900 km of rough arctic terrain before he reaches his first strategic objective. There the Norwegian land forces, as part of the joint and combined force will defeat the aggressor piecemeal through inducing system shock by rapid maneuvers and mastering of terrain and climate.

The land forces doctrine is developed based on studies undertaken in the early 1990's, which used the U.S. BOS's as a vehicle for defining tasks and missions for the different parts of the army. The research and development organization in the Norwegian Army is small, and centered around the Army division of the Norwegian Armed Forces Staff College. The branch schools have a responsibility for development in their separate

branches, and the Army Staff and the Staff College do the coordination. The resources allocated for this effort leaves much to be desired. Presently only a few officers are assigned to research and development positions at the Staff College and Doctrine Section of the Army Staff.

5 ANALYSIS

5.1 NATIONAL SECURITY STRATEGY

U.S. – Norwegian relations have always been close. Living outside the European Union, the Norwegian people depend upon having alternative trading partners to the EU. The transatlantic ties have therefore been strong in the Norwegian population, with a thorough knowledge of U.S. affairs and people. Through cooperation in NATO, the two states have developed close ties. The U.S. is a world power, and the differences between the two states should therefore be obvious. On some occasions however, being a superpower may be a disadvantage, with a high profile foreign policy, the U.S. may unconsciously escalate differences between herself and other states, or between third party adversaries.

When the Norwegian covert peace initiative in the Middle East reached the basic results of the Palestinians and Israelis being willing to talk openly to each other, the U.S. entered the scene and carried the process through to the signing of a peace treaty in Washington 13 September 1993.⁷⁰ U.S. had the power to make the former adversaries compel with the spirit of the Oslo treaty through economic and political means.

The use of military force to achieve national objectives is accepted as one of the nation's political tools in both the U.S. and Norway. While the U.S. led the coalition to drive the Iraqis out of Kuwait, Norway uses military force more as a political token. Norwegian forces are not trained, equipped or of a size, that allows anything other than small scale OOTW.⁷¹ Of the U.S. National Military Strategy concepts of *strategic agility, overseas presence, power projection and decisive force*,⁷² none seems applicable to the Norwegian Army.

The way the U.S. and Norway approach future concepts is different. While the U.S. Army employs the entire TRADOC organization in the pursuit of the future army, and holds the modernization process as one of the top priorities, the Norwegian research and development capability is relatively small and dispersed.

5.2 MILITARY STRUCTURE

The ways the two military forces are commanded are different. The U.S. have their president as their Commander in Chief, while the Norwegian King is the formal commander of the Norwegian forces. For operations, the U.S. CINC will be the warfighting commander for his area, while Norwegian forces in time of crisis and war will be transferred to NATO command.⁷³ In Europe, the double-hatted CINCEUR/SACEUR, who is a U.S. general, will exercise operational command (NATO OPCOM) of Norwegian forces, and combatant command over U.S. forces assigned to NATO.

While the U.S. corps is the main warfighting echelon, the corps level does not exist in the Norwegian Army. The highest tactical echelon is the 6. Division, which has a cadre located in the Troms area. This division performs most of the types of tasks a U.S. corps does, it comprises among other things its own ASOC, and is able to command allied forces. The three separate brigades may operate as an independent unit under an operational level HQ, or subordinate to the division. The military structure of the Norwegian defense forces have been decided partly from traditions (the army has had its main military presence in the Troms area since the 1950's) and partly from the political and operational decision on selecting the Troms area as the main defensive lines. The strength of the terrain led the retreating German forces from Finland and the Litsa front to establish fort-

fifications in the same general area as the Norwegian forces build their defensive lines in the 1980's.

5.3 OPERATIONS

Norwegian forces will always fight on their own territory, defending against a presumably superior aggressor, while there is no similar conventional threat to the U.S., which borders Canada and Mexico. The U.S. forces will therefore always have to fight on foreign territory, being at least in part sustained from their base of operations in CONUS. The Norwegian government has chosen to establish the main defensive positions in Troms, some 900-KM from the Norwegian eastern border (Annex 4). However, since the majority of the population lives south of the Arctic Circle, and the topography covering the 900 km south of the main defensive area is very rough, some similarity may exist between the two armies regarding fighting away from their base of operations.

Being a mobilization force, the Norwegian Army's main units will be mobilized from the population center in the south of Norway, while the majority of the materiel is stored in the North. Although the U.S. concept of power projection and sustainment is of a completely different magnitude, and the problems related are far greater in size and scale, there are some parallels to the Norwegian problems of sustaining the force in the North from the base of operations in the south.

The U.S. Army is an all-volunteer force, with a professional officer corps, NCO's and enlisted. The Norwegian Army is in principle an all reserve force, although a cadre of officers serves in their wartime positions as their peacetime job. The level of professionalism should therefore in theory be significantly greater in the U.S. Army. The training for the U.S. soldier is more diverse than that of the Norwegian soldier, because of the variety

of missions he must be trained for. The Norwegian soldier during his first year of conscription is trained specifically for his wartime duties, in the environment he is supposed to fight, and with the equipment he is going to fight with. The training may therefore be more specifically aimed at core skills in the relevant environment.

The Norwegian Army places great emphasis on arctic warfare training. Conscripts are drafted during summer and sent straight to the arctic north where they serve a full year. Survival skills for the Norwegian soldiers in that type of environment are great, presumably better than that of the U.S. soldier. Arctic warfare is a nearly forgotten subject in the U.S. Army.⁷⁴

5.4 TACTICAL LEVEL WARFARE

The Norwegian Army during the cold war prepared to fight Soviet divisions as NATO's northern flank. This flank protected NATO and U.S. sea lines of communication across the Atlantic, and was of paramount importance to cut off the Soviet Northern fleet from the high seas. Today, any attack on Norwegian territory will in itself involve an overwhelming attacking force. Norwegian forces will therefore have to fight outnumbered, and as part of a strategic defense.

U.S. forces will in all expeditionary warfare be relying on mounting an overwhelming force to defeat the enemy in a single, short blow. A protracted war, or a series of indecisive battles may reduce popular support for the war. It is the author's opinion that the U.S. may be reluctant to engage in a war that entails massive amounts of casualties and great economic burden on the U.S. population, unless vital national interests are at stake. War for the two nations will therefore be opposite phenomena. The U.S. will want to employ massive force to achieve her war objectives as rapidly as possible, using high-

tech solutions over manpower, a preference for stand-off systems as opposed to close-in combat, and a great emphasis on force protection.

Norway will find herself in the opposite situation. The Norwegian defense forces will inherently be inferior to an attacker. The defensive force will have to focus on attaining local superiority in time and space, not being able to defeat the superior attacker in decisive battle. Norwegian terrain is restricting in itself, and will be a great force multiplier for the defender. High mobility in mountainous terrain, coupled with a modern command and control system will enable Norwegian forces to defeat numerically superior forces.

Common for the two nations is that they both are high-tech states, with a high standard of primary civilian education, and a very sophisticated industry capable of producing state of the art systems for command and control. While the U.S. relies on high-tech to synchronize effect of a myriad of different systems on a high level, Norway must use technology to counter the synchronized effects of a superior force.

6 CONCLUSION

6.1 GENERAL

There are fundamental differences between the two armies, all the way from the political use of military force to attain political objectives in the two states, to the tactical employment of forces and force structure. Among the most important differences are that the Norwegian Army is a pure self defense force, never designed or intended to leave Norwegian territory, while the U.S. Army is a force with global reach and missions. The Norwegian Army is a reserve army, with a conscription system, while the U.S. army is an all volunteer army augmented by reservists as needed. Finally, the Norwegian Army will always be the defender, thus able to choose the strongest defensive terrain, while the U.S. Army needs to be able to fight in any and every terrain. These differences are important to consider when discussing the applicability of Force XXI and AAN concepts on the Norwegian Army.

The similarities are also of importance and will lead to conclusions to which Force XXI and AAN concepts that may be transformed to the Norwegian Army. The inherent abilities in the two armies to exploit technological and conceptual innovations are somewhat similar, both have well educated officers and soldiers, and a solid industrial base in their respective countries.

The Force XXI initiatives discussed in this monograph, are battle command and the Combat Information Center. The monograph shows that battle command is a characteristic of the Force XXI battlefield applicable to the Norwegian Army. Other characteristics of the battlefield may also be applicable, but need further investigation. Combat In-

formation Center is an organizational approach to attain situational awareness, and although experiments suggested that the CIC had serious shortcomings, future solutions to the problem of creating a recognized common picture or common situational database will be of interest to the Norwegian Army.

6.2 RECOMMENDATIONS

The U.S. Army is investing great efforts in the planning for both the near and long term development of the future army. The Force XXI development may hold solutions to challenges in command and control that the Norwegian Army has been struggling with. The AAN studies gives direction to the changes in the U.S. Army, by describing future trends in technology and the future of warfare. These assessments will be useful for the long term planning in Norway.

Although the differences between the armies are significant, the Norwegian army should pay close attention to the findings of the Force XXI and AAN studies. Observing the findings of Force XXI and AAN from a distance may not be adequate. With the limited research and development resources in the Norwegian Army, it is the authors conclusion that the only way to ensure access to the totality of the process in the U.S. Army would be to assign a Norwegian liaison officer to TRADOC. His task would be to report the findings of the U.S. Army experiments, and assist TRADOC in any way possible. That way, the Norwegian Army would be able to gain access to important research results first handedly, possibly enabling the Norwegian research and development agencies to transform the U.S. concepts and solutions into something applicable to the Norwegian self defense Army.

APPENDICES:

- 1: Bibliography
- 2: Glossary
- 3: Geostrategic position of Norway
- 4: Map of Norway
- 5: Organization of 6. Division/Norwegian Army
- 6: Organization of 4th ID (M) (EXFOR)

ENDNOTES

¹ T. K. Derry, *The Campaign in Norway*, (London: Her Majesty's Stationery Office, 1952), 144.

² Richard Petrow, *The Bitter Years*, (New York: William Morrow & Co, 1974), 39

³ Olav Ark, *Norsk Militært Tidsskrift*, (3-1998): 15. The popular name for the German land forces at Narvik was "Armée Gruppe Dietl", named after the Austrian Gen Edouard Dietl. The German Army units were comprised mainly of 139 Regiment of the 3. (Austrian) Mountain Division. This unit had seen action in Poland in 39, and was especially trained for winter warfare.

⁴ Ark, "Om Fjellkrig og Krigshistorie, Tilbakeblikk på Narvikfronten 1940": 14

⁵ Petrow, *The Bitter Years*, 96.

⁶ J W Pratt et al., *A History of United States Foreign Policy*, 4th ed, (New Jersey, Prentice Hall inc, 1980): 405.

⁷ The Norwegian Parliament, *White Paper no 16*, 1991.

⁸ The Royal Ministry of Foreign affairs, *Minifacts about Norway*, 20th ed, (1996).

⁹ The Norwegian Parliament *White Paper no 16*

¹⁰ Ibid

¹¹ Authors recollection of description of future C2 system objectives. Document is classified.

¹² U.S. Department of the Army. *TRADOC Pamphlet 525-5, Force XXI Operations*. (Ft Monroe, VA 1994): i.

¹³ Ibid

¹⁴ CHOD/Norway, *Tactical Doctrine for the Army*, Final draft, (Oslo Nov 97-Apr 98): 1

¹⁵ Ibid: 4

¹⁶ The reason for the distance between the border and the defensive area is partly due to a policy of détente, not posing any threat to neighboring states, and that of creating logistical difficulties for an attacker having to cross over vast desolate areas with a minimum of communications, little cover and infrastructure and harsh weather conditions. The warning time for a mobilization army will be longer, and the terrain chosen for the defence is a natural chokepoint with strong terrain features.

¹⁷ The Norwegian Parliament White Paper No. 22/1997 (<http://odin.dep.no/repub/97-98/stmld/22/>)#

¹⁸ The military threat consists of two parts, the capability to act in a hostile way, and the intent to do so. The intent is further dependent upon political, economical, social and informational matters; the hostile state must find it beneficiary to attack, disregarding the negative consequences.

¹⁹ Arne Solli, "Reserve forces - Main Element Comprises Heart of Defense Team," *The Officer* (July 1991): 48.

²⁰ Norwegian Department of Defense. *Facts on the Defense Forces*, Oslo 1996, p55#

²¹ Ibid: 51

²² Institute for Strategic Studies, *Strategic Assessment 1997*, (Ft McNair D.C., National Defense University, 1997): 8.

²³ President William J. Clinton, "State of the Union Remarks on Foreign Relations Before a Joint Session of the U.S. Congress" (Washington, D.C., January 27): 1998; available from <http://www.usia.gov/topical/pol/union.htm>

²⁴ "A National Security Strategy for a New Century", The White House, (Washington D.C. Oct 1998).

²⁵ Disregarding TF VI, which supports anti drug operations, and domestic support operations as outlined in *A National Security Strategy for a New Century*, The White House, Washington D.C. Oct 1998, P 19-20.

²⁶ R. M. Walker and Dennis Reimer, "A Statement on the Posture of the United States Army Fiscal Year 1999". (Washington D.C. February 1998): 2.

²⁷ President William J. Clinton, "Commencement Address U.S. Naval Academy", (Annapolis May 22, 1998); available from <http://www.usia.gov/journals/itsps/0798/ijpe/ijpe0798.htm>

²⁸ "A National Security Strategy for a new Century": 5-6. The support in the population depends on a number of factors, among which the affiliation in the U.S. population for the objects to be achieved through U.S. intervention. For instance, retaliations towards the U.S. population after each bombing of Baghdad may reduce the popular support for future punitive expeditions against Iraq.

²⁹ The 6 criteria are: The United States should not commit forces to combat unless its national interests are at stake. The commitment must be made with "sufficient numbers and sufficient support to win." It must be carried out with "clearly defined political and military objectives." "The relationship between our objectives and the forces must be continually reassessed and adjusted as necessary." It should have the support of the American people and their elected representatives in Congress. It should be a "last resort.

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³¹ U.S. Secretary of Defense, *National Military Strategy*, (Washington DC, 1997)

³² Ibid

³³ Tempo is defined as the frequency in which military and other actions are undertaken. A hallmark for U.S. operations is that this frequency is so high that adversaries are unable to react in a timely manner to the U.S. actions, thus creating a systematic check.

³⁴ CONUS: the part of USA situated on the mainland of the North American continent. Serves normally as the base of operations for power projection operations. See Jomini, A. *The Art of War*, (London, Greenhill Books, 1992): 77.

³⁵ U.S. Secretary of Defense, *National Military Strategy*

³⁶ The terms "The U.S. soldier", and "he" are in this monograph gender neutral.

³⁷ U.S. Secretary of Defense, *National Military Strategy*

³⁸ P. H. Herbert, *Deciding What Has to be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, (Ft Leavenworth, KS, Combat study Institute 1988): 22

³⁹ Authors observations after finishing one year of CGSOC and nearly six months of AMSP.

⁴⁰ J.G. Miller and K.C. Reitinger, "Force XXI Battle Command", *Military Review*, (July-August 1995): 5.

⁴¹ The term "Real-Time" indicates that events, positions and statuses appear on the screen simultaneously with the occurrence. A real time picture may be used for fire- direction and employment and aiming of stand off weapons. A real time picture is very difficult to achieve, especially on a higher level of command where information need to be processed. For situational awareness purposes, a near-real-time will be sufficient.

⁴² U.S. Department of the Army. *TRADOC Pamphlet 525-5, Force XXI Operations*: 3-8

⁴³ Ibid: 3-10

⁴⁴ Ibid: 3-12

⁴⁵ Ibid: 2-9

⁴⁶ Command paralysis is the state that occurs when the amount of information presented to a commander is so great, and the information itself is so unstructured that he (or his staff) is unable to distill the important information from the clutter. Given that the commander realizes this condition, it will lead to hesitation in his decision making, making him unable or unwilling to make timely decisions.

⁴⁷ D.P. Bolger, *Savage War, Americans at War in the 1990's*, (Novato, CA, Presidio Press, 1995): 302.

⁴⁸ U.S. Department of the Army, *FM 100-5 – Operations, Revised final draft*, (Washington D.C., June 1998): 6-9

⁴⁹ U.S. Department of the Army. *TRADOC Pamphlet 525-5, Force XXI Operations*: 3-18

⁵⁰ Ibid

⁵¹ G. R. Sullivan, *Force XXI, Americas Army of the twenty-first Century*, (Ft Monroe, VA, TRADOC, 1995): 1.

⁵² Ibid: 6

⁵³ T.R. Goodkoep and B.E. Venable, "Task Force XXI – an Overview", *Military Review* (March-April 1997): 4.

⁵⁴ Ibid

⁵⁵ Ibid

⁵⁶ Ibid

⁵⁷ Ibid

⁵⁸ L. G. Bornman, *Staff Organization and Processes for the Digitized Division: The Combat Information Center*, (Ft. Leavenworth, KS, September 1996): 2.

⁵⁹ Ibid: 9

⁶⁰ Ibid: 11

⁶¹ R.B. Killebrew, "The Army After Next – TRADOC's Crystal Ball eyes the Service's Shape Beyond Force XXI", *Armed Forces Journal International*, (October 1996) 36.

⁶² Ibid: 35

⁶³ Norwegian Department of Defense. *Facts on the Defense Forces*, (Oslo 1996): 65.

⁶⁴ The author served as a member of the writing group that drafted the foundations for the doctrine. The information given in this document is based on his memory. Although the doctrine itself is classified, elements and general descriptions is considered to be unclassified.

⁶⁵ The helicopters are a part of the Air Force, but supports Army operations.

⁶⁶ Arne Solli, "Reserve forces - Main Element Comprises Heart of Defense Team": 49

⁶⁷ Although the coast-line between the area of Trøndelag and Troms seems open, large areas of the SLOC is shielded against blue-water naval attacks by skerries and islands. The Norwegian Navy, mainly a littoral force, can probably defend parts of the SLOC against surface and sub-surface threats.

⁶⁸ Forsvarets Overkommando/Hærstaben, *Taktisk Doktrine for Hæren*, Final draft, (Oslo 10 Nov 1997): 2.

⁶⁹ Although not an official NATO term, Sub-PSC is used to describe JTFNON, so that it may command allied forces such as NAL MAGTAF, AMF and if necessary, parts of ARRC.

⁷⁰ The first meeting in what were later to become "the Oslo channel" takes place in London 4. desember 1992 Participants were Abu Ala of PLO and Yair Hirschfeld of Israel. Terje Rød Larsen, the architect behind the process did not participate.

⁷¹ The Norwegian Parliament *White Paper No. 22/1997*, Ch 5

⁷² U.S. Secretary of Defense, *National Military Strategy*

⁷³ The Home Guard, local militia-type units will be kept under national command, but may support NATO commanders as appropriate.

⁷⁴ J.F. Gebhart, *The Petsamo-Kirkenes Operation: Soviet Breakthrough and Pursuit in the Arctic, October 1944*, Leavenworth Papers number 17, (Ft. Leavenworth, KS, Combat Studies Institute, 1989): xiv.

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Glossary

| Term | Explanation |
|-------------|--|
| AAN | Army After Next. The concept study for the U.S. Army for the 2020 and onwards, encompassing technologies and concepts not yet developed. (U.S.) |
| ABCS | Army Battle Command System (U.S.) |
| AD | Air Defense |
| Analog | Using physical variables, e.g., voltage weight, etc, to represent numbers (<i>Oxford Desk Dictionary and Thesaurus</i> , American edition, Oxford University Press, New York, 1997) |
| ASCC | Air Space Coordination Cell (NATO) |
| ASOC | Air Support Operations Cell (NATO) |
| ATCCS | Army Tactical Command and Control System (U.S.) |
| AWE | Advanced Warfighter Experiment (U.S.) |
| BCBL | Battle Command Battle Lab (U.S.) |
| BOS | Battlefield Operating System (U.S.) |
| C2 | Command and Control (NATO, U.S.) |
| C3I | Command and Control, Communications, and Intelligence (NATO) |

| | |
|----------|---|
| CCIR | Commanders Critical Information Requirements (U.S.) |
| CG | Commanding General (NATO) |
| CGSC | Command and General Staff College (U.S.) |
| CHOD | Chief of Defense (Norwegian) |
| CIC | Combat Information Center (U.S.) |
| CONUS | Continental USA (U.S.) |
| COTS | Commercial Off The Shelf (U.S.) |
| CS | Combat Support (U.S.) |
| CSS | Combat Service Support (U.S.) |
| DEFCOM's | Defense Command's, highest operational commands in Norway in peacetime (Norway) |
| digital | Signals are transmitted as strings of on-off digits. "operating on data represented by digits." (Oxford Dictionary) |
| DIME | Diplomatic, Informational, Military and Economical. A states instruments of power. (U.S.) |
| CINCEUR | Commander-in-Chief Europe (U.S.) |
| EU | European Union |
| EXFOR | Experimental Force (U.S.) |

| | |
|-----------------|--|
| FCC | Fire Control Center (NATO) |
| FM | Field Manual (U.S.) |
| Functional HQ's | Headquarters planning and directing one BOS |
| SACEUR | Supreme Allied Commander Europe (NATO) |
| HLO | Helicopter Liaison Officer (NATO) |
| HNS | Host Nation Support (NATO, UN, U.S.) |
| HQ | Headquarters (NATO, U.S.) |
| HQNORTH | NATO MSC responsible for operations in Norway (NATO) |
| IFOR | Implementation Force in Bosnia-Herzegovina (NATO) |
| joint/combined | Composed of forces from more than one service, and more than one state |
| JTFNON | Joint Task Force North Norway (NATO) |
| MDMP | Military Decision Making Process (U.S.) |
| MLRS | Multiple Launch Rocket System (U.S.) |
| MSE | NATO Major Subordinate Command (NATO) |
| NATO | North Atlantic Treaty organization |
| NGO | Non Government Organizations |

| | |
|----------------------|---|
| OOTW | Operations Other Than War (AKA Support and Stabilization operations) (U.S.) |
| Operation Weserübung | The plan for the German attack on Denmark and Norway in 1940 |
| CINC | Commander-in Chief (U.S.) |
| PVO | Private Venture Organizations |
| RCP | Relevant Common Picture (U.S.) |
| ROE | Rules Of Engagement (U.S., NATO, UN) |
| SFOR | Stabilization Force in Bosnia-Herzegovina(NATO) |
| SINCGARS | Single Channel Ground and Airborne Radio System (U.S.) |
| SLOC | Sea Line Of Communication (NATO) |
| STANAG | Standard NATO Agreement (NATO) |
| STUFT | Ships Taken Up From Trade (Norwegian) |
| TF | Task Force (U.S.) |
| TRADOC | Training and Doctrine Command (U.S.) |
| UN | United Nations |
| WMD | Weapons of Mass destruction |

Arctic Region

North Pacific Ocean

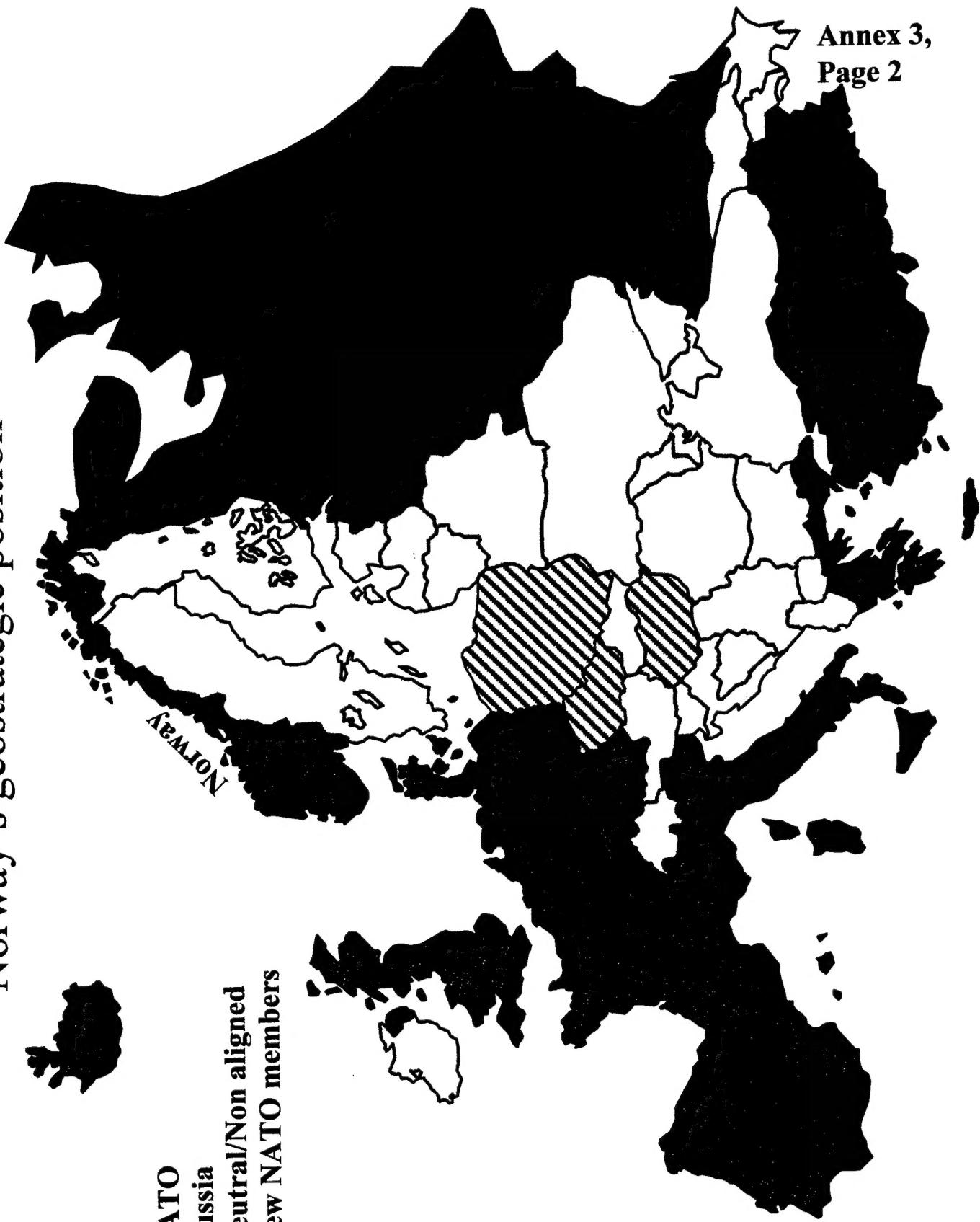
**Annex 3,
Page 1**



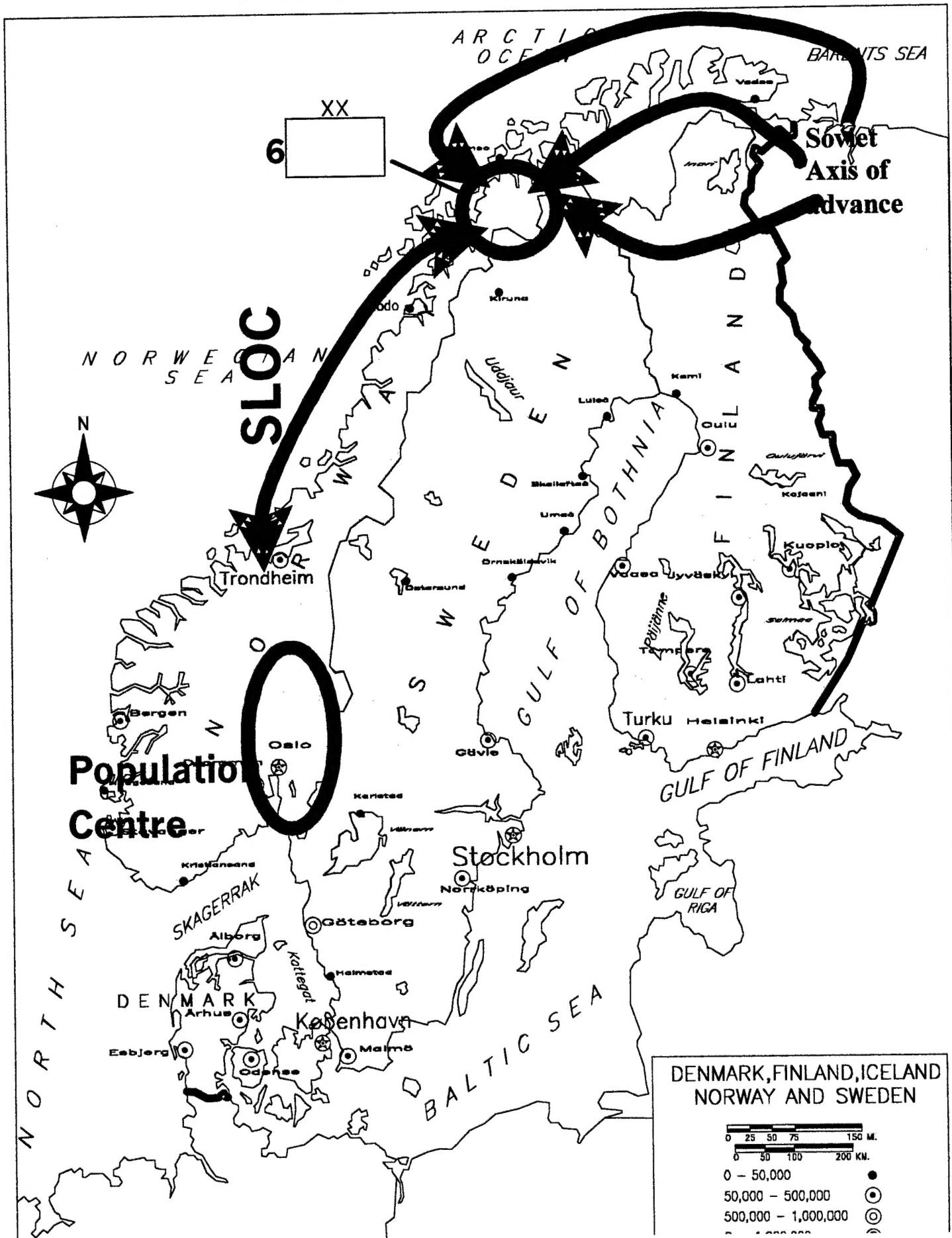
Norway's geostrategic position



- NATO
- Russia
- Neutral/Non aligned
- New NATO members

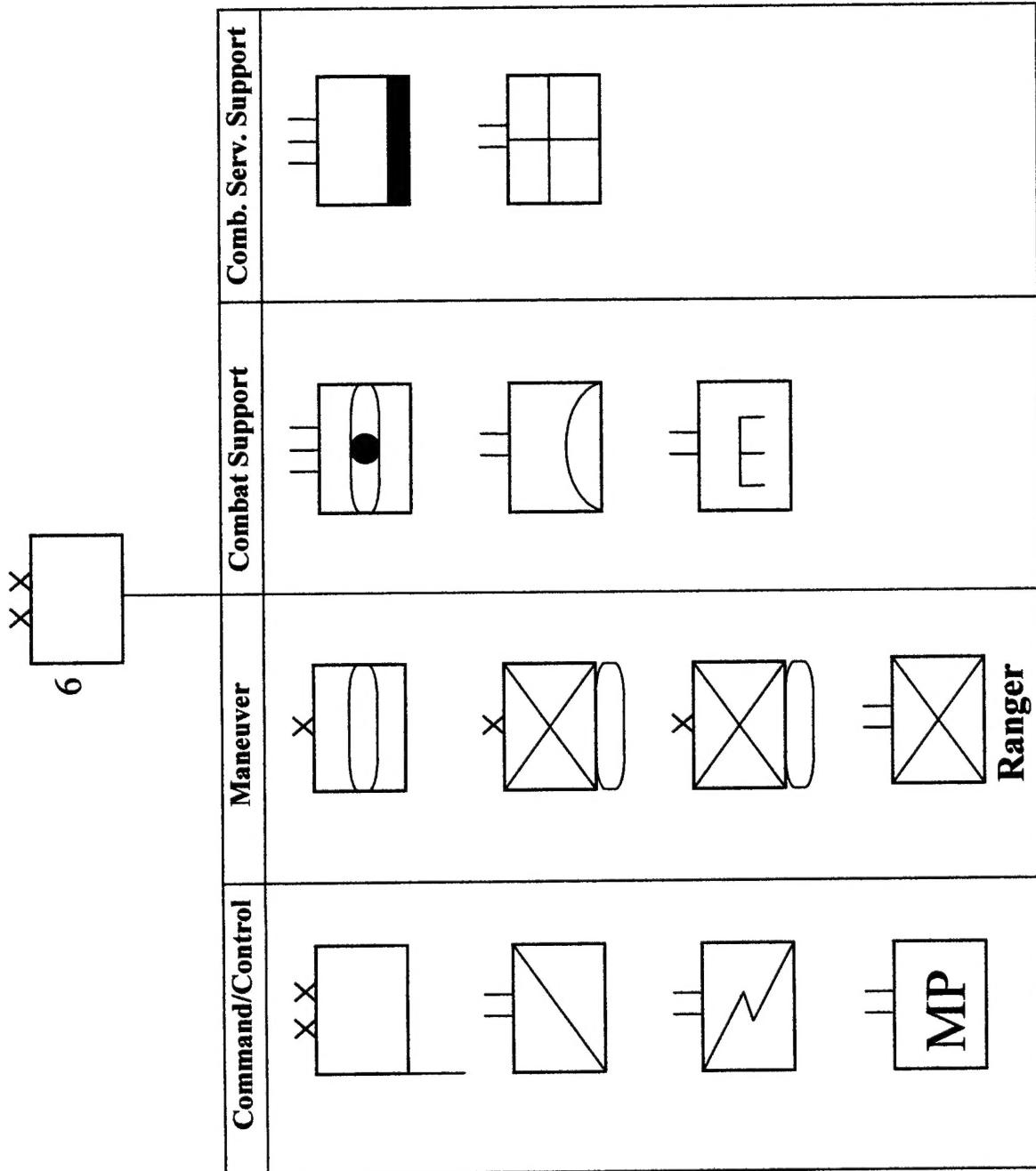


Cold War Scenario

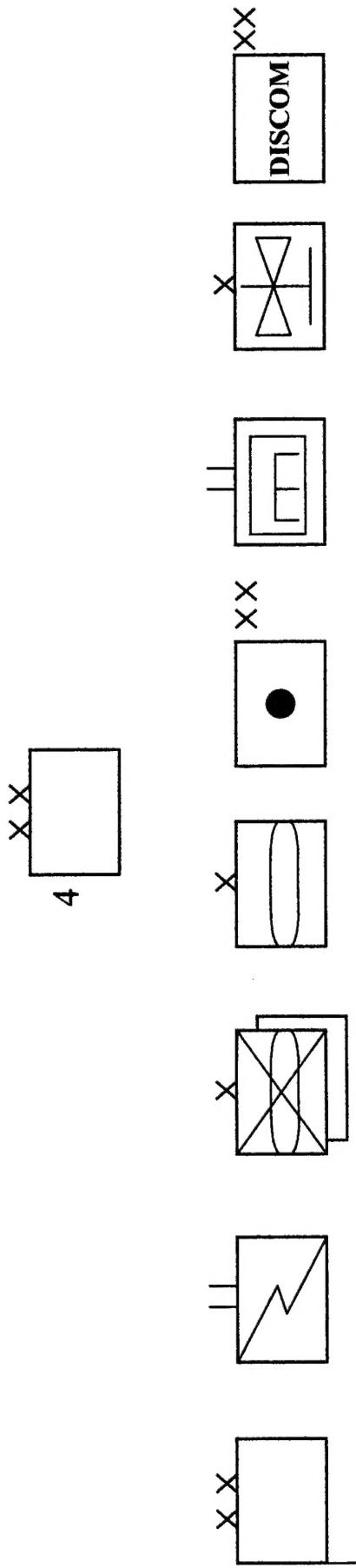


Annex 5

Organization 6. Division



Organization Mod HVY Div



Annex 6

TRADOC Analysis Center, Force XXI Division Design Analysis, Phase 1,
Final Report, Ft Leavenworth, KS Mar 1996, p ii